

# **ABSTRACT**

## **BACKGROUND & AIM**

Blood component therapy is a very common intervention practised in newborns. However, transfusions are not without risks, and they should be given only when true benefits outweigh potential risks. Since neonatal physiology varies with the maturity, age, weight and the presence of morbidities, it is difficult to formulate one parameter to guide all transfusion decisions. The aim of the study was to evaluate the appropriateness of various blood components utilized in neonates and to assess the relationship between gestational age, birth weight and APGAR score with transfusion requirements and to evaluate the relationship between storage age of red cells and length of stay.

## **MATERIALS & METHODS**

All neonates (up to 28 days), who received transfusion of at least one unit of blood and its components in the Neonatal Intensive Care Unit (NICU) at Institute of Child Health & Hospital for Children were included for a period of one year (September 2016 - August 2017). Transfusion thresholds for packed red cells, platelets, Fresh Frozen Plasma and whole blood given by National Neonatology Forum (NNF) of India, American Association of Blood Banks, British Committee for Standards in Haematology and Evidence based Expert Opinion were used to categorize appropriate transfusions from

inappropriate transfusions. Categorization of Gestational Age by WHO & ACOG, Birth Weight by WHO and APGAR score at 5 min by ACOG were used to assess the relationship between these parameters with transfusion requirement of blood components. There is no standard definition for fresh or old RBCs. So, in this study the storage age of red cells <7 days and <14 days were considered fresh to assess the relationship between LOS and storage age of red cells.

## **RESULTS**

In our study, a total of 100 neonates received 460 transfusions. 66 neonates received 129 packed red cell units of which 91% were appropriate. 53 neonates were transfused with 166 platelet units of which 96% were appropriate. 66 neonates were transfused with 155 fresh frozen plasma units of which 86% were appropriate. 8 neonates were transfused with 10 whole blood units of which 90% were appropriate.

Very low birth weight premature neonates received frequent transfusions. Gestational age and Birth weight of the neonate had a significant association with red cell requirement. Red cell requirement was inversely proportional to the gestational age and birth weight of the neonate. Platelet requirement is high in  $\geq 32$  weeks of gestation. Storage age of red cells does not influence the Length Of Stay (LOS) of the neonate.

## **CONCLUSION**

On analysing the blood utilization practices among neonates in our study, appropriateness is on par with the current consensus of transfusion practice. In our study, Gestational age and Birth weight of the neonate had a significant association with transfusion requirement. Very low birth weight premature neonates bear the brunt of multiple donor exposures due to frequent transfusions. Further, our study reiterates that there is no significant difference between LOS and storage age of red cells in neonates. Thus, this study emphasizes the rational use of blood and its components and reduction of multiple donor exposure.

## **Keywords**

Neonates, Appropriate, Length Of Stay and Storage age of red cells.